CATS

**CAPITOL AREA TIMEX/SINCLAIR
USERS GROUP :Formerly**
Prince George's
Timex/Sinclair User's Group

NEWSLETTER

$1.00 per copy
Please subscribe.

AUGUST 1985
Vol. 3, No. 5.

NEW PRESIDENT'S MESSAGE

For the record: The new officers elected at the June meeting and who took office as of July 1st, are: John Conger, President; Jules Gesang, 1st VP; Tom Bent, 2nd VP; and Sarah Fisher, Sec'y/Treas.

The bylaws call for the President to appoint four other members to be Directors. The Directors include: all officers plus Charles (Hank) Dickson, a club founder and first President; Mark Fisher, past President and Editor of the Newsletter; Mike Cohen, past VP; and Alan Pollock, an active member.

July Director's Meeting and Audit Report:

Bylaws also call for two members to audit the club financal books and records in June. Mike Cohen and I started the audit in June and received preliminary figures for the first Directors' Meeting, held July 1st. That meeting focused on the cost of last year's over-printing the Newsletter, above the 300 copy normal run, to totals reaching 600 in one month. The costs of printing and mailing in the six months from July '84 to Dec. was $1552 versus $1032 from Jan. '85 thru June, a 300 copy per month period, except for the single page mailing in Jan when Jules was ill and Mark first assumed the roles of publisher and editor. This excess cost of $520 was offset partially by advertising revenue of $415 for the full fiscal year and by the saving of $145 printing costs in Jan., a total offset of $560. The auditors found that the offset did not produce a $40 surplus however because the membership dues did not meet the costs of the Newsletter. At the then $12 rate, a breakeven would have required a 200 member level which was never achieved. Membership in the last fiscal year appears to have fluctuated from a low of about 100 in Jan '84 to about 170 at year's end, which indicates an operating deficit of some $350, less

the above "surplus" of $40 or a net deficit of about $310. Basically, what happened was that advertising never reached totals hoped for.

At this year's dues rate of $15, the breakeven is 160 members, a level we first exceeded this past June, starting at about 110 members in Jan. With new members joining at a rate of 5 or 6 a month, the prospect is that by Dec we may reach or exceed 200 active members for the first time in club history.

It may be news to some that the club is bigger than ever and is still growing, but that seems to be the case. Manufacturers may be suffering, but the millions of users like us are more active than ever, improving skills, upgrading hardware, enhancing software and learning new programming languages. Of course, many members only join to receive the Newsletter, but the

NEXT MEETING !!!!

FIRST, come on over to the Takoma Park Library and help Hank Dickson give a roomful of kids an experience with Timex computers. Bring a small TV and a TIMEX computer. See related article and map in this issue.

At the meeting:

1. General question and answer session
2. How computers count: an overview of binary numbers and machine code, by John Conger.
3. Break
4. Burning an EPROM to run your software from the 2068's cartridge port: a hardware demo, by Tom Bent.

From the Editor

As Sarah and I paste up this issue, it looks like we'll have another jam-packed 20 pager. I love it! Something I particularly enjoy are the articles from members that haven't contributed before. This newsletter should serve as a place where any member of CATS can try out his prose style, to share opinions or facts, programming tips or conundrums.

KEEP THEM COMING!

I've been planning to write articles on a number of subjects; I'll list them here, and if you are interested in doing it instead, let me know - an article in the Xerox is worth two in the mind. 1) A 50,000 mile report on the 1000 - what breaks, what can be fixed, and where can it be used. 2) Tape head maintainance - when is it worn too much, degaussing, and cleaning. 3) Program analysis - given a running program, what can you do to master it, so that you can bend it to your needs? 4) How to print Vu-calc tables on an 80 column printer; or alternately, sideways on the 2040 printer.

CURRENT EVENTS

You may notice that we've got a price on the top of the masthead. No, we're not going to compete with the POST; the price was added to make it easier for the bookstores and newsstands that carry our letter to justify the space. We aren't getting any of the money. It has been pointed out that it would be cheaper to buy the letter each month than to join. That's true, except for one thing - if we don't get members from those sources, we will drop the experiment.

The point is membership. John talks about 160 members as being a breakeven point for the club, and that's true for more than just financial reasons. Having a broad base means that there's someone around that shares your interests.

Allan Pollock made a prediction a year ago. He said that he didn't think we would still be around in 15 months. It looks like his rhetorical prediction won't come true. I'm sure that he is as happy as anyone about how it came out, but his basic point is still valid. We are mortal - we could go under: and it is only your continuing contributions that allow us to exist. Those contributions can come in the form of articles, new activities, new members, and advertising. We need them all.

INVESTIGATIVE REPORTING: The T/S Connection

A few months ago, a number of T/S magazines and newsletters carried a report on The T/S Connection.

TAPE DUBBING

By Jim MacKenzie

I hope everything went well at the last dubbing session. I was lucky enough to recieve a ten minute tape from George White for the TS 1000. I also have a tape from Mark Fisher, but I haven't been able to load it. I'll try to get it straightened out before the next meeting.

Therefore I'll have at leat ten minutes of new programs for the TS 1000. Please write, phone, or meet, Mark or myself about giving us a homebrew, or magazine program. Jim (301) 495-9139 after 4 pm, or Mark (301) 589-7407. We both live at 700 Erie Ave., Takoma Park, MD 20912.

CONTRIBUTORS

The Baraschs	London Sunday Times
Tom Bent	Jim MacKenzie
John Conger	Alan Pollack
Hank Dickson	Roald Schrack
The Fishers	H. E. Weppler
Terry Hardenbergh	George White
Jim Henthorn	ZX Computing

N/L DEADLINE	MEETING DATE
July 19	August 10
August 16	September 14
September 14	October 12

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SUBMISSIONS for this newsletter are eagerly solicited. First priority will be given to member's submissions. Publication of material does not transfer rights from the author, in fact, it may establish priority.

Submissions may be reviews, articles on applications, programming techniques, hardware, or anything else you can imagine. Pertinent articles from other publications will also be considered.

Bring material to the meeting, or send it to PO box 725, Bladensburg, MD 20710. I would prefer material to be typed, single spaced, in 3½" columns - but don't break your back: the Xerox dosen't really care. Printouts from the 2040 printer are fine, but, use Radio Shack paper, and don't put scotch tape over the printing.

general meeting attendance of about 60 in winter and 40 in summer seems to be holding up. We had 46 at the July meeting.

And for the first time in a long time, we will operate during the last half of this calendar year above breakeven and will partially offset the starting deficit.

This long winded report is background for the decision of the July Director's meeting to put on "hold", pending completion of the audit, any further printing of the Newsletter beyond the standard 300 level.

However, auditors found that the printing and mailing costs for the normal run of 300 copies was not covered by membership dues at '84 rates of $12, and could not be covered unless membership numbers reached 200, which it never did. For the present fiscal year, from July '85 to next July, the auditors found that we can expect normal attrition at membership renewal time to reach about 40% which would start next calendar year with some 120 members – a below breakeven level. Some late renewals plus new members at a 5 or 6 per month rate can rebuild club stength again to the 200 level by the end of '86. For the fiscal year of this administration, we expect to just breakeven, based on dues revenues alone.

At the economic printing rate of 300 copies a month at an annual cost of $2400, we need an average membership of 160 at $15 each to breakeven. It is clear that overprinting by even 100 copies a month at an extra cost to print and mail of $32.50 a month or $384 a year is not warranted as a means of attracting new members since membership dues at best are at breakeven. Extra copies can be justified only if we receive advertising revenue to cover the cost.

Why the 300 Copy Newsletter Printing?

Printing costs are quoted to us on a basis of multiples of 100 copies and by the number of pages per copy. Although we have had only between 100 and 165 members in the last year, we also send free copies to other User's Groups in exchange for theirs (which latter may be seen by any member at the monthly meetings, or at the weekly "hardcore" meetings at Mark Fisher's house.) We also send some copies to active T/S peripheral manufacurers and producers of software. Some go to prospective new members and some go to member dropouts for a month or so. New members often buy back issues at cost. So it goes.

My Hopes for the Future:

New memberships are essential to the continued health of the group, but my personal opinion is that the best way to maintain the critical mass of numbers without which activities will cease is to stimulate special interest activities such as the hardware workshops that Tom Bent proposed at the July general meeting, by the Machine Code class, by the applications group meetings and by the computer literacy classes Hank Dickson has been conducting at various libraries around the area. Newspaper notices of these activities in the Post Monday business section's computer calendar page have brought numerous inquiries and several new members to to club just in the past two months.

I cannot emphasize too much the importance of the Newsletter. Perhaps half our members cannot or do not attend general meetings. Their contact with the T/S world is often only thru publications like ours or dedicated technical Newsletters like Syncware News(Tom Bent being its Editor). The group is indeed fortunate that we have in our membership some very knowledgeable people who are also quite willing to spend time and energy to help the rest of us, like Mark and Tom. Other members who write for the Newsletter, sharing their programs and ideas with all of us, render an invaluable contribution. I do hope they will continue their work.

My hope is to expand upon these above mentioned activities in the new club administration year and I urge you all to take advantage of the opportunities the group offers to enhance your machines and to improve your skills. That is what your Users Group is all about!

Attending a Machine Code class is guararanteed to teach you more about how the computer, any computer, really works than any other thing you could do. And the assembler program, "HOT Z", used in part of the class, not only allows you more easily to program machine code, but opens the Sinclair ROM for inspection (disassembles it) and lets you also see the machine code of commercial programs you have such as VU-CALC or PRO/FILE, so you can modify or enhance them if you wish.

Probably one of the greatest opportunities you may have is Tom Bent's proposed hardware workshops. He should have a summary outline of his presentation at the July general meeting of projects you can do, cheaply and under expert supervision, such as build a parallel or serial port, add memory to the 2068, build a Spectrum emulator, wire a real keyboard for the T/S 1000 and much, much more – as the ads say.

The future of the Sinclair machines is rich with possibilities, but it will only be really rich if you make it so. Stay active – and encouage new members to join us. That way we all benefit and the full potential can and will be realized. Happy and successful computing in the comming year! (John Conger 654-5751)

CATS USER GROUP WORKSHOP

Tom Bent

Do to the lack of general support for TS computers, we will have to start repairing our computers by ourselves. Timex will still repair your computer, but you will not get your computer back. What you do get was someone elses previous troubles.

What we propose is a general self-maintenance workshop consisting of one hour lecture by various guest (hardware hacker) speakers, who will cover the different aspects of computer and electronic maintenance, construction and design; and one (or more) hour of hands on upgrading of either your machine or your technical prowess.

The general concept of the workshop itself is to give the novice confidence in opening up his or her computer or upgrading it, and to give the experts a time and place to build their super TS computer. This will allow you to spend a few extra intense evenings with your friends (other than your computer), children or spouses. They will appreciate that, I'm sure.

The July meeting showed an enthusiastic response to the workshop. We opened up a couple of machines on which several modifications have been made, and discussed just how easy it is to make these simple changes. We discussed the structure of the 1000 and 2068 and the various upgrades that can be made to each machine. Among the upgrades discussed included:

1. Expansion boards
2. Keyboards
3. Memory to 192K.
4. Printer ports
5. Cartridge boards
6. Joysticks
7. Reset Buttons
8. Load Amps
9. RGB and Video Mods
10. Static Ram

Each of these projects, except adding 192K RAM, can be done for $20.00 or much less. Some don't cost anything! There are several projects that we did not get to.

We also discussed why maintenance is needed (dust and corrosion, normal wear and tear), and what breaks (moving parts: keyboard, printer, switches, cables, etc.)

WORKSHOP DETAILS

A User Group has tremendous buying power. By purchasing in quantity, cost comes down. However, there are no freebies. Any profit goes into the CATS operating budget.

It will require some basic tools (see the wish list).

It will last for about 2 hours, 1 hour lecture and 1 hour hands on, and will be held (tenatively) in the New Carrolton Library from 11 to 1, prior to the regular meeting. This leaves an hour for lunch or trouble shooting your project.

You build your own boards. There will be some diagnostic equipment and lots of help to guide you through the rough spots.

We plan to cover from very basic techniques to trouble shooting your system. We will also have demonstrations to illustrate key points.

We need your input on what you would like to do. Among the most popular first projects are the Static RAM cartridge board, bus expansion (allows you to add more memory and other niceties) and Spectrum emulation.

We will have more information at the next meeting, and hopefully some initial cost plan. Come and join in on the fun!

TOOL WISH LIST

Soldering Iron (low power, fine tip)
Small screwdrivers
Needlenose pliers
Wire stripper and cutter
Solder (very thin 63/37=and not 60/40)
Sponge (not in kit)

The above are available in a kit from Radio Shack (RS) #64-2801 for $14.95. You should have at least this much. You can eventually acquire or build what follows:

Conductive foam
File or emory board
Super glue
Small wire brush (very small)
Tweezers
Flux Remover
Anti static spray (Static Guard)
Vice or helping hands RS#64-2094 or 64-2093
Alligator clips
Hi-intensity light
Logic probe
Magnifying glass
Digital Volt Meter (DVM)
  (I did say it was a WISH list)
Bread board (if you don't like to solder)
Desoldering tool (if you do like to solder)

Most of these components may be purchased
from Radio Shack, but if you shop around,
you'll find some very good buys.

LIBRARY TAPES

A Thank You and Well Done goes out to
everyone involved with the June C.A.T.S.
meeting. It was an outstanding event.
A special Thanks goes to Jim MacKenzie
for conducting the tape copying session
that combined Christmas with Las Vegas
Night (gift programs that may load or
may not.) My loading success rate was
80% and one of the three no-loads was
definitely caused by the low quality
tape that I used. "CRYPTOPAD" was one
of the programs that loaded and some
operating hints may be found below.

CRYPTOPAD
TS1000 / ZX81

This 2K machine code program replaces
your pencil and eraser when you try to
solve cryptogram puzzles as found in The
Washington Post Sunday Magazine and
other publications. You must supply
all strategy but the program speeds the
process of solving the cryptograms by
instantly substituting all letters with
your guesses at their counterparts. To
enter the cryptogram or message, simply
use the keyboard as usual but push the
ENTER key only when the entire puzzle
has been entered since this initiates
phase two. Use DELETE (shift 0) to do
any correcting of text, and use SPACES
to avoid splitting words between lines.

Punctuation is an important clue in the
solving of cryptograms, but since the
TS1000 does not have an apostrophe, an
alternative must be used. The program
won't accept graphic symbols so a close
parenthesis ")" or a MORE THAN sign "⟩"
might serve as an apostrophe.

In the second phase of the program, you
substitute one letter for another with
two keystrokes. The first key picks a
letter from the cryptogram and shows it
in inverse. The next keystroke selects
an available letter from the bottom of
the screen and positions it under the
first selected. SPACE is often a very
important second key since it undoes a
previous guess and liberates a letter
for use elsewhere. Also, it is a good
practice to position punctuation marks
by replacing them with themselves i.e.
hit the punctuation keys twice in order
to make them appear in position in the
solution line. To BREAK the program in
this phase press DELETE (shift 0).

I use "CRYPTOPAD" every Sunday with the
POST puzzle and it saves me much more
time than the 30 seconds that it takes
to load this handy program.

George White

CRYPTOGRAM

ALSG TRY OURXS TRGOUMRY ONKKMGET M

URTH, RH'T FMTRO. FIH ALSG LS

KNIGHT LRT THSSE, RH'T SUSOHYRO.

MAPPING THE VARIABLES

   This program will map the
Variables area to confirm the
variables used or to find an
abandoned array which is occu-
pying capacity.

   To use the program, MERGE it
with the main program. Run the
main program to activate the
variables. Then GOTO 9920. It
will print the name, type and
bytes for each variable, and for
the mark at the end of the
Variables area.

   A review of Figures C-3 to
C-8 (Appendix C of the User
Manual) will explain the method.

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C.A.T.S.
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I have enjoyed an occasional reading of your publication and thought to offer a "FEE" for thoes interesting and usefull hours reading C.A.T.S.

Therefore: I enclose my $15 for membership (if you will have me), and, the attached short program ...ALFABETER!

I use it as a SUBROTINE in several of my programs with which I help to keep straight the operations of an apartment complex. Yes! I use a teeny-weeny ZX-81! I have not yet run out of RAM!

I use a ZX inside a K2 KRADLE with 64K built-in ...A 2040 Printer as you see ... and an old HUNTER board with QUICKLOAD (from ROMPAK) and a PROGRAMRES UTILITY (from DELPHIC). I have not yet seen anything to that surpasses this little wonder, anywhere! A "voice" is on the way as is a Modem. Someday I may go on to a QL if they ever get the bugs out.

I hope your members find the ALFABETER usefull.

Terry Hardenbergh
5 July 1985

```
9920>REM  ********** MAP VARS
9925 PRINT "VARIABLE";TAB 15;"BY
TES"''
9930 LET PV=PEEK 23627+256*PEEK
23628
9935 LET QV=INT (PEEK PV/32)
9940 LET RV=0
9945 PRINT CHR$ (PEEK PV-32*QV+9
6);: IF QV=3 THEN LET RV=6
9950 IF QV=5 THEN LET RV=RV+1: I
F PEEK (PV+RV)<128 THEN PRINT CH
R$ PEEK (PV+RV);: GO TO 9950
9955 IF QV=5 THEN PRINT CHR$ (PE
EK (PV+RV)-128);: LET RV=RV+6
9960 IF QV=7 THEN PRINT TAB 6;"L
OOP";: LET RV=19
9965 IF QV=2 OR QV=6 THEN PRINT
"$";
9970 IF QV=4 OR QV=6 THEN PRINT
TAB 6;"DIM";
9975 IF RV=0 THEN LET RV=PEEK (P
V+1)+256*PEEK (PV+2)+3
9980 PRINT TAB 15;RV
9985 LET PV=PV+RV: IF PEEK PV=12
8 THEN GO TO 9995
9990 GO TO 9935
9995 PRINT TAB 6;"Mark";TAB 15;"
1";TAB 0;"Total";TAB 15;PV-(PEEK
 23627+256*PEEK 23628)+1
9999 STOP
```

H. E. WEPPLER

```
1 RAND USR 8600
2 DIM D$(27,9,25)
3 LET N$=""
4 LET Z$="ABCDEFGHIJKLMNOPQRS
TUVWXYZ**"
5 CLS
6 PRINT ;" D$  DATA FILE STRI
NG (20) ???? "
7 PRINT
8 INPUT A$
9 IF LEN A$=0 THEN GOTO 27
10 FOR Z=1 TO 26
11 IF A$(1)=Z$(Z) THEN GOTO 13
12 NEXT Z
13 IF Z<9 THEN GOTO 20
14 FOR I=1 TO 9
15 IF D$(Z,I,4)=" " THEN GOTO
17
16 NEXT I
17 LET D$(Z,I)=STR$ I+N$+A$
18 LET D$(Z,I)=STR$ Z+N$+D$(Z,
I)
19 GOTO 25
20 FOR I=1 TO 9
21 IF D$(Z,I,4)=" " THEN GOTO
23
22 NEXT I
23 LET D$(Z,I)=N$+STR$ I+N$+A$
24 LET D$(Z,I)=STR$ Z+N$+D$(Z,
I)
25 PRINT ;D$(Z,I)
26 GOTO 8
27 GOSUB 53
28 GOTO 5
29 CLS
30 PRINT AT 10,0;"PRINTER ON F
OR A RANKED LISTUNG "
31 PAUSE 20
32 LPRINT TAB 6;"ALPHABETICAL
LISTING"
33 LPRINT
34 FOR Z=1 TO 27
35 LPRINT TAB 8;Z$(Z)
36 FOR I=1 TO 9
37 IF D$(Z,I,4)=" " THEN GOTO
39
38 GOSUB 42
39 NEXT I
40 NEXT Z
41 GOTO 44
42 LPRINT ;D$(Z,I,5 TO )
43 RETURN
44 LPRINT
45 LPRINT TAB 7;"LISTING  COMP
LETED"
46 LPRINT
47 LPRINT
48 LPRINT
49 PRINT AT 10,0;"          A
LL DONE          "
50 GOSUB 53
51 GOTO 29
52 STOP
53 PRINT AT 21,0;"0=MORE 1=STA
RT 2=PRINT 3=INPUT"
54 INPUT U$
55 IF LEN U$=0 THEN RETURN
56 IF LEN U$=1 THEN GOTO 2
57 IF LEN U$=2 THEN GOTO 29
58 IF LEN U$>2 THEN GOTO 3
59 STOP
60 REM
```

TO ELIMINATE THE LETTER BETWEEN SECTIONS ERASE OR REM LINE 35.

TO KEEP A BLANK LINE BETWEEN SECTIONS MAKE LINE 35 "LPRINT"

NUMERIC OR SYMBOL STRINGS WILL BE INDEXED LAST

They claimed to have bought out Timex's inventory of spare parts, and to be the only authorized Timex repair center. You didn't see it here, because the claim seemed far-fetched. The CATS investigative team looked into the situation, and found that their story has toned down considerably; no, they didn't buy out Timex, but yes, they are willing to repair 1000's and 2068's. Unlike Timex, they will fix your machine, and return it; and unlike Timex, they have variable rates, depending on what they do. Another member has ordered a 1000 from them, and was satisfied with the response time and the 1000. There are rumors of some odd things they've done in the past, but they seem to have cleaned up their act this year.

OOOOOPsssssss!

In drawing up the Monitor driver circuit in May's newsletter, I made a one digit error in the callout of the transistor. It's a 2N2222, not a 2N222. Unfortunately, if you followed my spec's exactly, (and I called it out wrong three places) you would have bought a transistor that works backwards from what was intended. Well, remember that it's a 2N2222, and have fun. (Where were those glasses?)

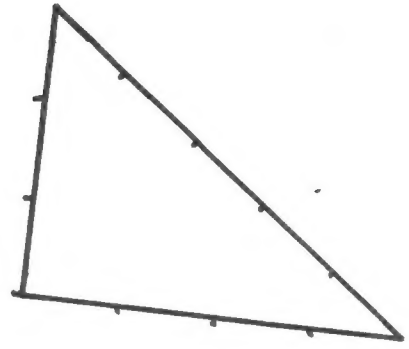## The PYTHAGOREAN THEOREM - SOLVED!
by
Murray & Caroline Barasch

2500 years ago, Pythagoras stated the theorem that bears his name: that the square of the hypotenuse of a right triangle is equal to the sum of the squares of the other two sides. From the first, is was apparent that some triangles with integer sides would fit this theorem (in fact, Egyptians had already been using the 3-4-5 triangle to generate a true right angle for hundreds of years). But what other triangles will satisfy the theorem with integer lengths? P. de Fermat worked on this problem.

```
   5 LET F=0
  10 FOR X=3 TO 100
  20 FOR Y=X TO 100
  30 LET Z=SQR (X*X+Y*Y)
  40 LET T=INT (Z+.5)
  50 IF ABS (T-Z)>.000001 THEN G
OTO 120
  60 FOR N=2 TO INT (X/2)
  70 LET F=F+((X=N*INT (X/N)) AN
D (Y=N*INT (Y/N)))
  80 NEXT N
  90 IF F>0 THEN GOTO 110
 100 PRINT X;"   ";Y;"   ";T
 110 LET F=0
 120 NEXT Y
 130 NEXT X
 140 SLOW
```

3	4	5
5	12	13
7	24	25
8	15	17
9	40	41
11	60	61
12	35	37
13	84	85
16	63	65
20	21	29
20	99	101
28	45	53
33	56	65
36	77	85
39	80	89
48	55	73
60	91	109
65	72	97

THIS PROBLEM WAS SUGGESTED BY A TV PROGRAM WHICH INCLUDED A REFERENCE TO <FERMAT'S LAST THEOREM>. IT DEALS WITH INTEGER SOLUTIONS OF $X\uparrow N + Y\uparrow N = Z\uparrow N$. ALTHO A STRAIGHTFORWARD PROGRAM USING 3 NESTED LOOPS GIVES ALL SOLUTIONS FOR N=2, IT TAKES VERY LONG TO RUN.

I THOUGHT 2 LOOPS WOULD TAKE MUCH LESS TIME TO RUN. AS SOON AS <SQR >WAS PUT INTO A PROGRAM TAIL-END NUMBERS BEYOND THE PRINTED VERSION OF Z GAVE FALSE INEQUALITIES. LINES 40-50 COMPARES INT Z TO Z RESTRICTED TO A DIFFERENCE OF .000001. THIS IDEA WAS SUGGESTED BY ANNE ANDERSEN. ANOTHER DEVICE IS VAL STR$. LINES 60-90 DEAL WITH SUPERFLUOUS SOLUTIONS THAT ARE MULTIPLES, AND LINE 20 WITH PERMUTATIONS. AFTER INITIALIZING F(FLAG) TO 0, THE N LOOP TESTS FOR A COMMON FACTOR. IF THE <AND>ING LOGIC PRODUCES A <1> THEN THE <PRINT> IS SKIPPED AND F RESET TO 0.

CAROLYN & MURRAY BARASCH

CRYPTOGRAM SOLUTION

CATS Community Contribution

Continues with Computer Class

For the past three summers, members of the Capital Area Timex/Sinclair users group have helped stage a vacation program of "computer awareness". It has been presented in the PG and Montgomery Country library systems as part of CATS' substantial involvement in community service. It was created for children in the 9-to-12-year-old age group.

This summer one computer awareness session has been planned for the Takoma Park library on Saturday, August 10 and a second for the Chevy Chase branch library early in the fall.

Some of the CATS members who have contributed their time and equipment to this effort in the past include:

> Evan Evans
> Mark Fisher
> Steve Johnson
> Sam Lefkov
> Akinbola Olowofoyeku
> John Stakem
> Joe Vallin
> Jim Wallace

Once again help is needed. We want to have ten Timex/Sinclair stations running for the session at the Takoma Park library Saturday morning, August 10.

This date was selected to make it possible for members to enjoy an "All-Sinclair Day" with a minimum of external disruption.

The session for the students will begin at 10 a.m. and end around 12:30 p.m. CATS members who are able to assist can bring their Timex/Sinclair systems into the meeting room anytime after 9:30 a.m.

The session will be held on the second floor of the Takoma Park municipal Building, which is adjacent to the Takoma Park library. The library is located at 101 Philadelphia Avenue (see map). After finding a convenient parking space, participants may go down the alley between the Library and the Municipal Building, around to the back of the building, and enter through the rear door, which is next to the entrance to the Takoma Park police headquarters.

The adults with their portable T/S computers can be invaluable coaches when it comes to introducing the children to the unique Sinclair keyboard for the first time.

If your schedule permits, just show up anytime after 9:30 a.m. at the Takoma Park Municipal Building, hook up your computer, do some fine tuning, and be ready to take off.

If you do, you will be part of a memorable event, while providing a marvelous Sinclair experience to a group of appreciative youngsters.

A light lunch will be provided for the adult participants while they're still at the Municipal Building. Afterwards, all will repair to the New Carrollton library for another in the series of stimulating CATS General Meetings. Five p.m. will mark the end of the All-Sinclair Day!!

Please don't hesitate to call if you have questions about any of this.

We hope you will be able to join us at Takoma Park!!

CHARLES H. DICKSON
(H) 577-6645
(W) 344-1895

What to Bring:

Any Timex/Sinclair computer: ZX-80
ZX-81
TS-1000
TS-1500
TS-2068

Wires, TV/Game box, plugs, etc.

Extension cord

Timex/Sinclair Users Manual

Your favorite small BASIC program
(ten lines, maxiumum)

(Note: 16K rampack not necessary.)

LIBRARY TAPES

"GRABOS"
TS1000   2K

A two-player, surround game is now in the C.A.T.S. library of tapes available to members for copying through the good efforts of Jim MacKenzie and others.

The 2K size of the game avoids wobble crashes, but it restricts the amount of on-screen documentation. Perhaps these notes can serve to explain GRABOS.

The two players share the keyboard to move their respective tokens around the screen, gathering "O"s (1 point per O). Player ONE 🔟 uses the 5 lower left hand keys (SHIFT thru V) and simultaneously, Player TWO uses the 5 upper right keys (6 thru 𝟶). The leftmost key of each group (6 or SHIFT) drives the token to the left. The rightmost key (𝟶 or V) drives the token to the right. Tokens are moved up by the key which is second from the left (Z or 7). The down keys are second from the right (C or 9).

The game screen wraps around left and right, top and bottom. Tokens may move only to locations occupied by an "O" so win strategy involves grabbing the "O"s so as to deny movement to your opponent (surround the opposing token with empty spaces.) The center key of each player (8 or X) is to be pressed if no move is open to that player. When 8 and X have

both been pressed, a scoreboard will be displayed indicating the number of "O"s grabbed by each player. The winner may be determined by the highest score on a rounds basis (select Key 1 for enough), or on an accumulated score (up to 9999) by choosing "2" for PLAY ON.

Each game is started with a countdown to encourage an equal beginning however Player ONE has a slight advantage since his/her keys are scanned first. Faster play helps eliminate this advantage, so a speed control value of 10 was used in memory location 17039. Of course other values may be POKEd into this location to change the pace of the games.

For those who would like to change or customize GRABOS with additional Basic programing be advised that although the machine code is called from statement 1 of Basic, return is made to statement 3 to miss statement 2 which saves GRABOS. Additional programing will require more than 2K of memory.

George White

****   ****

The City of Takoma Park

Nuclear-free (well, practically)

L = LIBRARY - 101 PHILADELPHIA AVENUE
M = MUNICIPAL BUILDING - 7500 MAPLE AVENUE
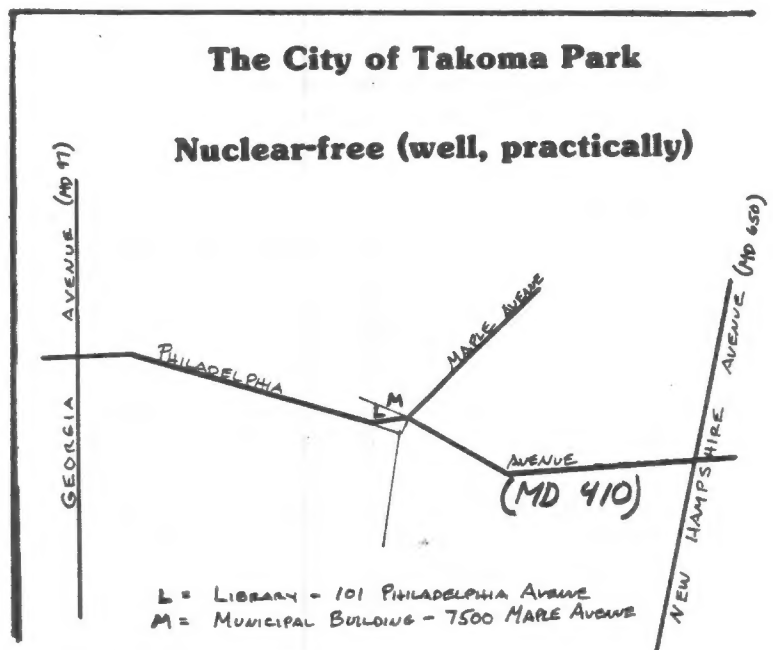
Machine Code Lecture notes

Part Two: Eight Bit Multiplication

The Z80 multiplies by using logic functions that are built into it. We have seen that to subtract, the Z80 exchanges 0's for 1's and 1's for 0's (logical NOT) in the number to be subtracted, adds 1 and adds that number to the number from which it is to be subtracted in order to get the difference (a method called the "two's complement").

The binary multiplication example opposite shows how 13 is multiplied by 11. Every time the right hand multiplier's bits are 1, the multiplicand is added to the partial result below. But, after each bit in the multiplier is examined (tested), the multiplicand is shifted left, which doubles its value.

Thus, in the example, we see three shifts left in the partial result, one for each 1 bit in the multiplier. Since each left shift doubles the previous value, the value of 13 after one shift is 26 and after three shifts is 104. So adding the three partial results of 13, 26 and 104, we get our result: 143.

The Z80 does exactly what we do manually. Each machine code instruction in the Hot Z Assembler printout opposite mimics action a human takes to multiply two eight bit numbers.

To test the multiplier bits, the machine shifts the multiplier right by one bit (code: SRL C – shift C register contents right, logic). See line 4093.

That shift sends the right hand bit to the "Carry Flag" in the F register. The next line, 4095 tells the computer to jump to line 4099 (NOAD) if there is no carry: JP NC NOAD. However, if the carry bit is a 1, then ADD HL,DE (add the contents of register DE, the multiplicand, to the contents of the 16 bit accumulator, HL)

Next, shift left the multiplicand in register E (SLA E). The A in the instruction SLA means an arithmetic shift. Again, the shift left of a binary number doubles the value of that number.

Next, rotate the bits to clear the Carry Flag (RL D). At the end of each loop, the counter in register B is reduced by one (Dec b). The counter started with the number 8, providing one loop for each bit in the multiplier. If B is not yet zero, line 409E says go to the beginning of the loop at the named line "MULT" and do it again. After each shift, if the next multiplier bit tested is a 1, the shifted multiplicand is added to the partial result in HL.

Finally, to print the result in BASIC, it must be transferred to the BC register pair. RET returns the subroutine to the main program

To input the numbers to be multiplied from BASIC, POKE them in addresses 16514 and 16515. Then to find the answer, type: PRINT USR 16516, which runs the program and prints the answer.

So how does POKE 16514 reach address 4082? 4082 is the hexadecimal number for the decimal number 16514. (See last month's drawing on the 64K memory and the notes on calculating the addresses.) 40 is the high byte, so multiply the 4 by 16, add the second number, 0, and multiply by 256. This will produce 16384. Then multiply the "8" in the low byte by 16, which gives 128. Finally add the "2" in the low byte which gives 130, and add the 130 to 16384 which gives 16514. --- John Conger 654-5751

Machine Code Lecture Notes:

Binary eight bit multiplication -

$$
\begin{array}{r}
0000 1101 \quad (13) \\
\times \underline{0000 1011} \quad (11) \\
\end{array}
$$

```
      0000 1101 = 13
     0000 1101  = 26
   0000 1101    = 104
  00,0 1000,111
  128+        8+4+2+1 = 143
```

← Multiplicand shifts left after each bit of multiplier is tested. Shifted multiplicand is added to result if bit tested is a 1.

Example 1-
MC subroutine for
8 bit multiplication:

```
ADDR HEXCODE    NAME MNEMONIC
================================
4082 07  } inputs
4083 09
4084 ED4B8240        LD BC,(4082)
4088 0608            LD B,08
408A ED5B8340        LD DE,(4083)
408E 1600            LD D,00
4090 210000          LD HL,0000
4093 CB39       MULT SRL C
4095 D29940          JP NC NOAD
4098 19              ADD HL,DE
4099 CB23       NOAD SLA E
409B CB12            RL D
409D 05              DEC B
409E C29340          JP NZ MULT
40A1 44              LD B,H
40A2 4D              LD C,L
40A3 C9              RET
```

Example 2 -
Improved version:

```
ADDR HEXCODE    NAME MNEMONIC
================================
40A4 2A8140          LD HL,(4081)
40A7 2E00            LD L,00
40A9 ED5B8340        LD DE,(4083)
40AD 1600            LD D,00
40AF 0608            LD B,08
40B1 29         MULT ADD HL,HL
40B2 D2B640          JP NC NOAD
40B5 19              ADD HL,DE
40B6 10F9       NOAD DJNZ MULT
40B8 44              LD B,H
40B9 4D              LD C,L
40BA C9              RET
```

The above printouts are from the screen of the HOT Z Assembler, and explained in the written notes attached. The 2nd example introduces two new concepts: Line 4081 instruction is ADD HL,HL. This is a doubling of the value and is the same as a shift left. DJNZ replaces two lines: DEC B and JP NZ in example 1.

          — J. CONGER
          7-20-'85

SNOWFLAKES ...

Another Example of Randomness

Here is a code for the 2068 that will produce snowflake-like patterns. Each run will produce a different pattern. The dendrites are produced on lines 80 to 160. The pattern is then developed from line 170 on, with the subroutine starting at line 300 making the copies at the different angles. The code will keep adding to the complexity of the pattern until you stop it with a break instruction. You can then do a copy instruction to make a print of your results.

The 2040 prints with pixels that are 20 % narrower than the screen pixel so you will not get a symmetric print if you have a symmetric picture on the screen.

If you would rather have a symmetric print then change the value of a in line 15 to 1.2 and see what happens. The examples show the value of a that was used.

If you are interested in the origin of snowflake symmetry you should read my letter to **NATURE** Vol.314,March 1985,page 324.

R. A. Schrack
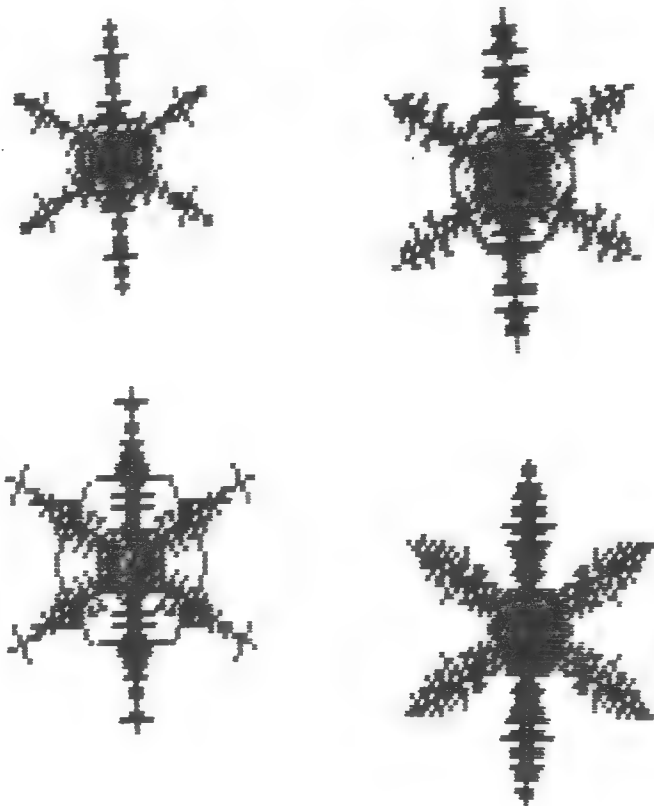
```
 10 LET ym=0
 15 LET a=1
 20 RANDOMIZE
 30 DIM p(12,40)
 40 LET y=1+INT ((ym+3)*RND)
 50 FOR n=1 TO 12
 60 IF p(n,y)=0 THEN GO TO 80
 70 NEXT n
 80 IF y<ym THEN GO TO 170
 85 IF ym>=29 THEN GO TO 40
 90 LET ym=ym+1
100 LET save=y
110 LET y=ym
120 LET x=0
130 GO SUB 300
140 GO SUB 400
150 LET y=save
160 GO TO 80
170 LET p(n,y)=1
180 LET x=n
190 LET t=0
200 GO SUB 400
210 GO SUB 300
220 IF t=0 THEN GO TO 240
230 GO TO 40
240 LET t=1
250 LET x=-x
260 GO TO 200
300 LET u=x
302 LET v=y
304 FOR i=1 TO 5
310 LET g=i*PI/3
320 LET gc=COS g
330 LET gs=SIN g
360 LET x=a*INT (u*gc+v*gs)
370 LET y=INT (v*gc-u*gs)
380 GO SUB 400
390 NEXT i
392 LET x=u
394 LET y=v
396 RETURN
400 PLOT 2*x+128,2*y+87
410 PLOT 2*x+129,2*y+87
420 PLOT 2*x+128,2*y+88
430 PLOT 2*x+129,2*y+88
440 RETURN
900 SAVE "snow" LINE 10
```


$a = 1.$
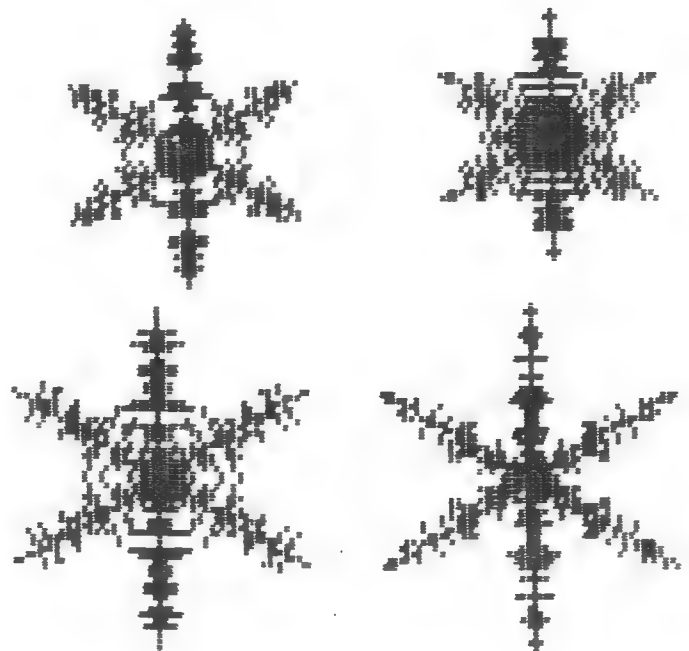
$a = 1.2$

SAVING VARIABLES
by
Jim Henthorn

Many times a program is written that requires the input of data that is then used in some manner. If you then turn your computer off, the program and the data are lost, unless you SAVEd the entire program to tape or made a hard copy of the output of your program. However this leads to other problems – the hard copy can be lost or at the least must be re-entered; the tape copy can only be used to make a new hard copy, you can not add more data to the variables already established. If you are SAVEing a long program (the one that led to this article was 18K) over and over it can begin to use up a tremendous amount of tape space.

It is possible to SAVE specific variables on the 2068, but they must be DIMensioned arrays, and must be SAVEd one at a time. The Membership list program, for example, uses 12 diferent arrays, requireing a tedious series of SAVEs – and even then, several important counters cannot be transferred. There is another solution that has been developed with the help of Mark Fisher. This involves the use of the DELETE token. When you enter "DELETE ,"" , the program is deleted or wiped out of the memory. (Since the screen memory is independent of the program area, listings that appear on the screen when you enter "DELETE ," will remain until you next press ENTER, even though the program they refer to has been erased.) What is not DELETEd is the variable section. One note of caution: if you hit CLEAR and ENTER, the variables <u>will</u> be gone. One possible subroutine is listed below.

```
 10 REM saving variables
 20 CLS: PRINT AT 3,4;"Do you
want to save your inputs to
tape? Y/N"
 30 PRINT AT 11,4;"Entering Y
will cause the program to be
DELETED----- please verify that
your output is correct."
 40 INPUT A$
 50 IF A$="" OR A$=" " THEN GO
TO 40
 60 IF A$="Y" THEN GO TO 80
 70 IF A$="N" THEN GO TO 130
 80 PRINT AT 15,0;"Enter file
name (max 10 chars)"
 90 INPUT B$
100 PRINT AT 16,2;"File name;
";FLASH 1;B$
110 PRINT AT 13,2;"Enter SAVE
(name of file)"
120 DELETE ,
130 RETURN
```

If you ENTER "Y" then the name of the file, the subroutine will delete the entire program and give a report code "C Nonsense in BASIC". The name that you wish to give your data will remain on the screen. It is now necessary for you to enter SAVE "name of file" and follow the normal routine for SAVEing and VERIFYing the data. If you plan to continue to use your computer after SAVEing data in this manner then press CLEAR and ENTER to eliminate the variables. Failure to do so will foul up the next program that you enter.

[By changing line 120 to "120 DELETE 140,:SAVE B$", the subroutine will delete everything but itself, and perform the SAVE automatically. When you write the program that is to use this data, there will be some special considerations; as lines MERGEd from tape will overwrite existing lines, it is necessary to avoid conflict between the master program and the subroutine fragment that was SAVEd with the variables. ed.]

When you write your master program you will have to include a subroutine to reload the data that you have already SAVEd. The routine listed below is one possibility.
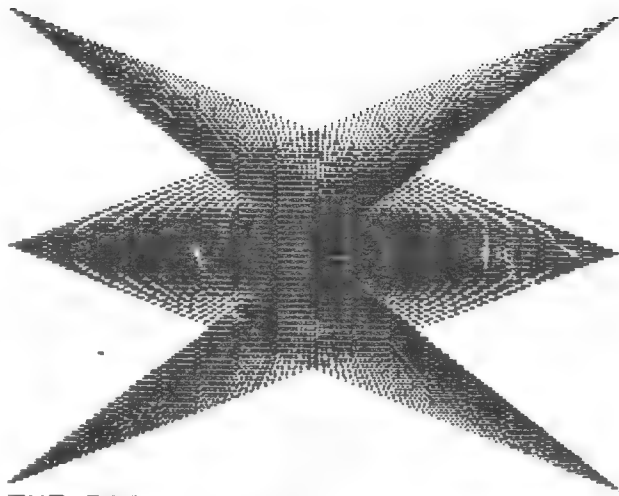
```
140 REM Merge old variables
150 CLS: PRINT AT 7,6;"Enter
name of file";AT 8,3;"containing
names to";AT 9,10;"be loaded"
160 INPUT C$
170 PRINT AT 11,3;"File: ";C$
180 PRINT AT 13,3;"START
RECORDER AND WAIT UNTIL PROGRAM
IS LOADED. PROGRAM WILL START
AUTOMATICALLY AFTER A SHORT
DELAY"
190 MERGE C$
200 RETURN
```

The delay varies depending upon the length of the program. I do not know what the computer is doing during the delay. I would appreciate it if someone who knows what is going on would let me know. I would be glad to answer any question about this article that you may have.

Jim Henthorn
3 First Light Ct.
Rosedale, MD 21237

Ed. note: This article was originally typed on Tasword II in 64 column mode. In spite of the Radio Shack paper, it was just not up to our standards of legibility. If you've got Tasword, please use the 32 column mode with the 2040 printer. Thanks for the article, Jim. MF

PRODUCT: Kempston Joystick Emulator
MACHINE: TS 2068/w Spectrum ROM
SOLD BY: G. Russell Electronics
         RD 1 Box 539-S
         Centre Hall, PA. 16828
         814-364-1325
PRICE: $19.95

Hot dog! Spectrum game enthusiasts listen up.

One of the frustrations of being able to load the marvelous Spectrum game programs is that the joystick menu option was always inoperable on a Spectrumized 2068.

Bill Russell's new Kempston joystick emulator changes all of that.

Kempston is the most popular joystick in England.

The neat little device slips perfectly into the 2068 cartridge port where it may reside permanently, if you like.

Simply plug in any Atari-type joystick, close the lid, load the Spectrum game, choose the Kempston joystick menu option, and you are suddenly playing the games the way they were supposed to be played. You can really fly that F-15 in Fighter Pilot without making like Liberace all over the keyboard. Night Gunner, TranZam, Manic Miner, Jet Set Willy, Space Shuttle, Spy Hunter, Shadowfire, Formula One, Alien 8, Baseball, Sorcery and Dragontorc are examples that really come alive with a joystick.

The extra attraction is that some Spectrum games without joystick options can be played with the joystick emulator. The great missile defense program Earth Defence makes you feel the thrill of arcade game speed right in your own machine ...without pumping all of those quarters in.

If you like playing Spectrum games, this well-made product is worth strong consideration.

This was written with Tasword II and printed with the Star PowerType.
==
For Sale: TS 2068. $104. 202-363-2244
==

TS 1000 Notes*

1. To initialize without pulling the plug, enter RAND USR 0.

2. Program size PEEK 16396 + 256 * PEEK 16397 - 16509.

3. Variables size PEEK 16404 + 256 * PEEK 16405 - PEEK 16400 - 256 * PEEK 16401.

4. Display size PEEK 16400 + 256 * PEEK 16401 - PEEK 16396 - 256 * PEEK 16397.

5. VAL "4E4" uses 8 bytes, 4E4 9 bytes, VAL "40000" 10 bytes, 40000 11 bytes.

6. Both PRINT and LPRINT delete the leading space of a token when used at the beginning of a PRINT, AT, or TAB statement, also when followed by another token.

7. To display the bottom two lines use within a program (line num) POKE 16418,0. Before using SCROLL or INPUUT switch off with (line num) POKE 16418,2.

8. To print the bottom two lines enter line 1 REM shift J, shift V, function LN, shift C, graphic shift A, function TAN, then POKE 16517,107. Within the program use (line num) RAND USR 16514, then (line num) COPY.

9. With MC programs stored in 1 REM, POKE 16510,0 to change the REM number to 0, and protct it from accidental deletion.

10. To make a line of MC invisible (certainC codes will self destruct when displayed) POKE 16514,118 and 16515,118. Remember the MC now begins at 16516.

11. To make a program run automatically when loaded, save the program with a line statement (usually at the beginning or end of a program), 9010 SAVE "MET" 9020 RUN. Now start the tape recorder and enter GOTO 9010. It will run automatically the next time it's loaded.

12. To stop a program from automatically running enter SAVE CHR$ USR 832 "" to load the program. When the program has finished loading the screen will go gray for three seconds. Press BREAK and you have stopped the program, otherwise it will start running.

13. Do not manipulate memory in slow mode. This means do not: enter, display, or edit basic, or block transfer in MC, it can backfire.

14. To adjust a tape recorder's volume and/or verify if a program is loading properly, simply stop the tape rcorder a few seconds after you have begun to load a tape. The computer will either crash or continue searching. A crash means the program was loading correctly until the tape recorder was stopped, a search pattern means there was a problem with title, or low volume.
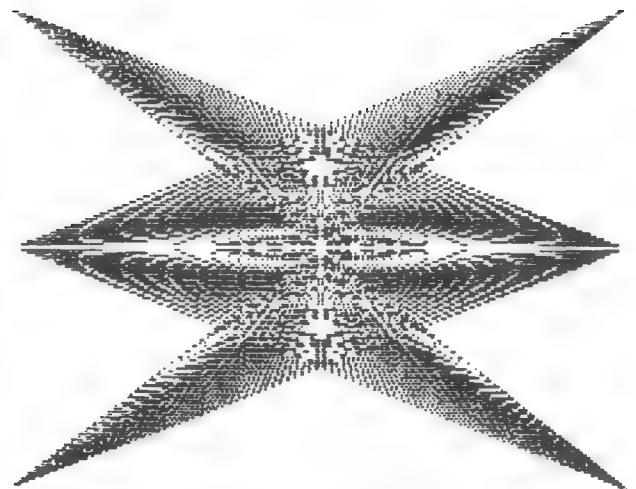
THE BASIC PROGRAM

```
   10 OVER 0: BORDER 0: PAPER 0:
CLS
   20 FOR a=1 TO 20: INK RND*6+1
   30 LET b=127: LET c=87
   40 FOR d=0 TO 85
   50 ON ERR GO TO 70
   60 PLOT b,c: DRAW 127-3*d,d
   70 ON ERR RESET : ON ERR GO TO
90
   80 PLOT b,c: DRAW -127+3*d,d
   90 ON ERR RESET : ON ERR GO TO
110
  100 PLOT b,c: DRAW 3*d-127,-d
  110 ON ERR RESET : ON ERR GO TO
130
  120 PLOT b,c: DRAW -3*d+127,-d
  130 NEXT d
  140 ON ERR RESET
  150 PAUSE 250: IF a=20 THEN STO
P.
  160 CLS : NEXT a
```
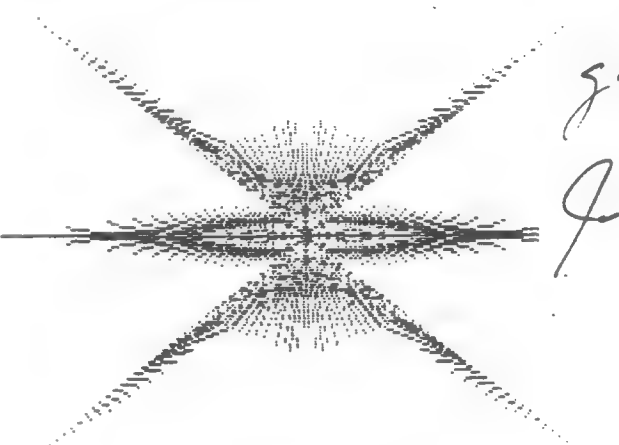
VARIATIONS ON A THEME-2

```
   10 OVER 0: BORDER 0: PAPER 0:
CLS
   20 FOR a=1 TO 20: INK RND*6+1:
OVER 1
   30 LET b=127: LET c=87
   40 FOR d=0 TO 85
   50 ON ERR GO TO 70
   60 PLOT b,c: DRAW 127-3*d,d
   70 ON ERR RESET : ON ERR GO TO
90
   80 PLOT b,c: DRAW -127+3*d,d
   90 ON ERR RESET : ON ERR GO TO
110
  100 PLOT b,c: DRAW 3*d-127,-d
  110 ON ERR RESET : ON ERR GO TO
130
  120 PLOT b,c: DRAW -3*d+127,-d
  130 NEXT d
  140 ON ERR RESET
  150 PAUSE 250: IF a=20 THEN STO
P
  160 NEXT a
```

Try this graphics program

Jim Henthorn

VARIATIONS ON A THEME-1

```
   10 OVER 0: BORDER 0: PAPER 0:
CLS
   20 FOR a=1 TO 20: INK RND*6+1
   30 LET b=127: LET c=87
   40 FOR d=0 TO 85
   50 ON ERR GO TO 70
   60 PLOT b,c: DRAW 127-3*d,d
   70 ON ERR RESET : ON ERR GO TO
90
   80 PLOT b,c: DRAW -127+3*d,d
   90 ON ERR RESET : ON ERR GO TO
110
  100 PLOT b,c: DRAW 3*d-127,-d
  110 ON ERR RESET : ON ERR GO TO
130
  120 PLOT b,c: DRAW -3*d+127,-d
  130 NEXT d
  140 ON ERR RESET
  150 PAUSE 250: IF a=20 THEN STO
P
  160 OVER 1: NEXT a
```

MSCRIPT:
DELETING BACKWARDS -
AND FOREWARDS
by
MARK FISHER

A few months ago, I included a patch to Jack Dohaney's Fat Characters loader for MSCRIPT. My patch changed the direction of the DELETE in MSCRIPT to match the 2068's usual mode. Since then, I've realized that MSCRIPT's DELETE-to-the-right can come in handy. Fortunately, MSCRIPT already includes two independent keys to perform the DELETE, so it is a simple matter to make one of them DELETE left, as the Timex normally does, and the other DELETE right.

In the listing below, I have used decimal, rather than hex notation. POKE each Value to the address given. These values can be added to the end of the Fat Characters loader, or simply POKED into a copy of MSCRIPT. Don't use a copy that's already been modified - I haven't included the POKEs needed to erase my first attempt at Delete-left.

Easter ... When and How Often

Easter is now fixed in the western world as the first Sunday after the first full moon after the vernal equinox. This means that Easter can occur in a 35 day period from March 22 to April 25. This code will give you the date for Easter for any year since the Gregorian calendar started in 1582.

```
 10 REM   *******************
 20 REM   * EASTER CALCULATOR *
 30 REM   *******************
 40 REM
 50 PRINT
100 PRINT "Give year that Easte
r date is   desired.  ";
110 INPUT yr
115 PRINT yr;
120 LET x=INT (yr/100+1)
125 LET y=INT (3*x/4-12)
130 LET z=yr-19*INT (yr/19)
135 LET z=z+1
150 LET u=INT (INT (8*x+5)/25-5
-y)
160 LET v=INT (5*yr/4-y-10)
170 LET w=INT (11*z+20+u)
180 LET t=w-30*INT (w/30)
200 IF t<>25 THEN GO TO 240
210 IF z<=11 THEN GO TO 240
220 LET t=t+1
240 IF t<>24 THEN GO TO 260
250 LET t=t+1
260 LET d=44-t
270 IF d>=21 THEN GO TO 290
280 LET d=d+30
290 LET c=d+v
300 LET cr=c-7*INT (c/7)
320 LET d=d+7-cr
325 LET d=INT d
330 IF d>31 THEN GO TO 360
340 PRINT "   March ";d
350 GO TO 50
360 PRINT "   April ";(d-31)
370 GO TO 50
```

After running the program for a few sample years to check its accuracy I decided to add a few lines to the code to see what the frequency distribution of days was. In addition to the additions and modifications shown below you must also add a DIM p(37) at line 5.

```
350 GO TO 370
360 PRINT "   April ";(d-31)
370 LET p(d-20)=p(d-20)+1
380 LET yr=yr+1
390 IF yr<2086 THEN GO TO 120
400 FOR k=1 TO 10
410 LPRINT "March ";20+k;TAB 11
;p(k)
420 NEXT k
430 FOR k=11 TO 37
440 LPRINT "April ";k-10;TAB 11
;p(k)
450 NEXT k
460 STOP
```

Easter ...

Frequency Distribution

March	21	0
March	22	4
March	23	7
March	24	2
March	25	9
March	26	16
March	27	15
March	28	12
March	29	15
March	30	17
April	1	20
April	2	18
April	3	16
April	4	15
April	5	15
April	6	21
April	7	20
April	8	15
April	9	14
April	10	12
April	11	20
April	12	21
April	13	16
April	14	14
April	15	17
April	16	17
April	17	21
April	18	18
April	19	17
April	20	17
April	21	13
April	22	18
April	23	15
April	24	6
April	25	5
April	26	5
April	27	0

Here is the distribution of occurances of Easter from 1583 to 2085.

The probability of Easter falling on any particular day seems to fall off for the 3 days at either end but to be fairly equal from March 26 to April 23. From random chance one would expect the observed number to vary by the square root of the number.
  In this case the average is 16.6 and the standard deviation is 2.6 which is even less than one might expect.

R. A. Schrack

Address	Value	Comment			
			64	114	;r
			65	111	;o
37305	223	;Address of Delete-left	66	114	;r
37306	174	;routine in jump tables	67	205	CALL ;Use cursor left routine
			68	185	B9 ;at 92B9H
44755	11	;Length of new prompt $	69	146	92
			70	195	JP ;Jump to normal delete.
44762	101	;e New prompt	71	18	12 ;at 9512H
63	114	;r	72	149	95

Barry Beattie

Running into more trouble: Sir Clive Sinclair and his C5 electric vehicle

HOOVER SUES SIR CLIVE FOR 1.5M

THE INVENTOR, Sir Clive Sinclair, faces a new financial crisis this weekend. Hoover, maker of his C5 electric vehicle, is suing him for £1.5m.

Sinclair has already sunk more than £7m of his personal wealth in the C5 project. Last month, attempts to sell his company, Sinclair Vehicles, broke down after one offer of £2.7m was described as not enough.

Hoover, which makes the C5 at its washing machine plant in Merthyr Tydfil, Wales, is claiming £1,525,000 for work done between November 1984 and last month. It is also claiming £32,720 interest.

Sinclair is understood to have given personal guarantees to Hoover

The writ has been issued against Sinclair personally at his business address, 23 Motcomb Street, London, SW1. It has not yet been served because he is on holiday in America.

A spokesman for Sir Clive said last night that any writ received would be contested strongly.

The C5 has been fraught with problems, including reliability and misleading advertising claims, since its launch in January. In April production was cut from 1,000 per week to 100.

The cuts followed a three-week suspension of production while 3,000 machines held in stock underwent "modification". Sales are only around one-tenth of the 100,000 target that Sinclair announced at the launch.

Hoover's legal action coincides with a hitch in Sinclair's negotiations to sell his financially strapped computer company, Sinclair Research, to Robert Maxwell the publisher. Maxwell is thought to be seeking better terms. Originally he agreed to inject £12m into the company to take control via a Pergamon Press subsidiary (Hollis Brothers) and a rights issue.

Discussions between Maxwell and Sinclair Research are proving protracted. And the longer they go on the more doubtful the value of the company becomes. Coopers & Lybrand, accountants called in by Maxwell, are working with Sinclair's accountant, Deloitte Haskins & Sells to determine the true trading

position of the company, and draw up plans and projections.

This should lead to a document by the end of the month, to be circulated to Hollis shareholders. Sinclair Research shareholders will be invited to subscribe to the rights issue. The deal will not be clinched until the end of August at the earliest.

Staff at Sinclair Research, though still loyal, are said to feel they have been "sold down the river". Sinclair is adamant that he will not be working directly for Maxwell. Under the agreement, he will run his own separate research company to develop the Spectrum and QL home computers. But the futuristic "fifth generation" computer project that is closest to his heart will not belong to Maxwell.

Creditors of both Sinclair companies are losing patience, conscious that the longer Maxwell delays, the more Sinclair Research's value falls. Creditors, such as AB Electronics, have so far been using pressure in the hope of securing payment. Hoover is the first to take legal action against Sinclair himself.

TOWERS OF HANOI

We promised the solution to this puzzle many moons ago. This is taken from ZX Computing, 10-11/83.
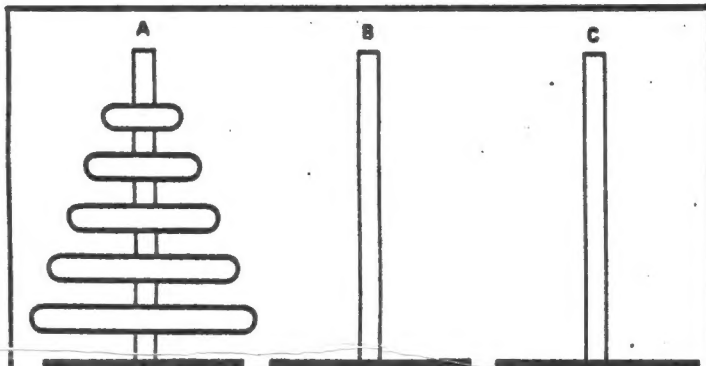

Fig. 1. You must move all the rings from Tower A via Tower B to Tower C in such a way that a larger ring never rests on a smaller ring.

```
 2 PRINT "TOWERS OF HANOI"
 4 DIM R$(9,9)
 6 LET R$(1)="          "
 8 LET R$(2)="          "
10 LET R$(3)="          "
12 LET R$(4)="          "
14 LET R$(5)="          "
16 LET R$(6)="          "
18 LET R$(7)="          "
20 LET R$(8)="          "
22 LET R$(9)="          "
24 LET M=0
26 LET D=170+PEEK 16396+256*PEEK 16397
28 PRINT "HOW MANY RINGS? (2 TO 8)"
30 IF INKEY$<"2" OR INKEY$>"8" THEN GOTO 30
32 LET N=VAL INKEY$
34 LET N1=N
36 PRINT AT 1,0;R$(9)+R$(9)+R$(9)
38 REM DRAW TOWERS
   ================
40 PRINT AT 5,0;
42 FOR R=1 TO N
44 PRINT R$(R)
46 NEXT R
48 PRINT "                 1           B        "
49 REM "MOVE A RING" ROUTINE
50 REM "MOVE A RING" ROUTINE
   ===========================
52 LET P=1
54 LET Q=2
56 LET R=3
58 GOSUB 70
60 PRINT AT 15,0;"OK IN ";M;" MOVES"
62 PRINT AT 17,0;"PRESS""P""TO GO AGAIN"
64 IF INKEY$<>"P" THEN GOTO 64
66 CLS
68 RUN
70 IF NOT N THEN RETURN
72 LET N=N-1
74 LET Y=Q
76 LET Q=R
78 LET R=Y
80 GOSUB 70
82 GOTO 108
84 LET M=M+1
86 LET Y=P
88 LET P=R
90 LET R=Q
92 LET Q=Y
94 GOSUB 70
96 LET Y=P
98 LET P=Q
100 LET Q=Y
102 LET N=N+1
104 RETURN
105 REM "GO FROM" TOWER
    ================
108 LET T=P
110 GOSUB 166
112 LET GF=TT
114 LET X=(T-TT)/33+5
115 REM "GO TO" TOWER
    ================
118 LET T=Q
120 GOSUB 166
122 LET GT=TT
124 LET Y=(T-TT)/33+5
126 REM "OTHER" TOWER
    ================
128 LET Z=2*N1-X-Y+15
130 REM DECIDE LIFT
    ============
132 LET Y1=Y
134 IF ABS (GF-GT)=18 AND Z<Y THEN LET Y=Z
136 IF Y>X THEN LET Y=X+1
138 REM LIFT RING
    =========
140 FOR L=X TO Y STEP -1
142 PRINT AT L,GF;R$(9);AT L-1,GF;R$(N+1)
144 NEXT L
146 REM MOVE TOWER TO TOWER
    =======================
148 FOR C=GF TO GT STEP 2*SGN (GT-GF)
150 PRINT AT L,C;R$(N+1);AT L,C;R$(9)
152 NEXT C
154 REM DROP RING
    =========
155 FOR L=L TO Y1-1
158 PRINT AT L-1,GT;R$(9);AT L,GT;R$(N+1)
160 NEXT L
162 GOTO 84
164 REM FIND TOWER TOP AND TOP RING
    ===============================
166 LET T=9*T-9
168 LET TT=T
170 IF PEEK (D+T) THEN RETURN
172 LET T=T+33
174 GOTO 170
```

Capitol Area Timex/Sinclair Users' Group
P.O.Box 725
Bladensburg, MD 20710

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MA 80 _____   full keyboard _____

ZX 81 _____   Printer _____

TS 1000 _____   type _____

TS 2000 _____   other interface _____

Special interest use for computer: ie, games, ham radio interface,

business, other, etc. _____

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Languages: Basic _____   Other _____

          Machine _____   _____

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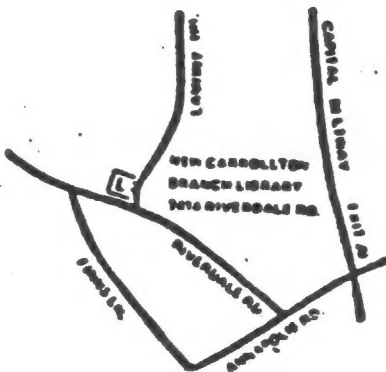
The next meeting of C.A.T.S. will be held on:
 Saturday, August 10, 1985 from 2 to 5 pm.
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